

Remarks

Reconsideration of this Application is respectfully requested.

Claims 1-25 are pending in the application, with claims 1, 16, 24 and 25 being the independent claims. Claims 16-25 have been withdrawn from further consideration by the Examiner under 37 C.F.R. 1.142(b), as being drawn to a non-elected invention, as discussed below.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Election/Restriction

The Examiner has required restriction to one of the following inventions under 35 U.S.C. 121:

- I. Claims 1-15, drawn to a process, classified in class 205, subclass 666; and
- II. Claims 16-25, drawn to a product-by-process, classified in class 428, subclass 98+.

The Examiner argues that the inventions are distinct because Inventions I and II are related as a process of making and product made and that the product as claimed can be made by another materially different process. Thus, restriction for examination purposes is required.

Applicants hereby elect to prosecute the invention of Group I, claims 1-15. This election affirms the telephonic election made on July 28, 2003 by Steven Mitchell. The election is made without traverse.

Description of the Claimed Invention

The claimed invention is directed to a process of etching an anode foil to produce higher capacitance foil without sacrificing foil strength. Initially, an unetched anode foil is etched in a first high temperature etch electrolyte solution. The etched anode foil is then removed from the first etch solution and a mask with a grid of openings is placed over the etched anode foil, exposing portions of the etched foil surface. The masked foil is placed in a second etch electrolyte solution, such that the exposed area of the foil is further etched. By this process, the exposed areas of the foil are heavily etched, while the masked areas of the foil remain lightly etched. The higher surface area in the exposed areas does not significantly decrease the strength of the foil as a whole, because a web of more lightly etched foil remains to retain foil strength.

Rejections under 35 U.S.C. § 103

Claims 1-3 and 5-8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,518,471 to Arora ("the Arora patent"), further in view of U.S. Patent No. 6,224,738 to Sudduth et al. ("the Sudduth patent"). Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over the Arora patent in view of the Sudduth patent, further in view of U.S. Patent No. 5,914,852 to Hatanaka et al. Claims 9-15 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Arora patent in view of the Sudduth patent, further in view of U.S. Patent No. 6,579,463 to Winningham et al.

The Examiner argues that the Arora patent teaches a process for etching an anode foil by placing an unetched anode foil in a first high temperature etch electrolyte solution, etching the anode foil, and then placing the anode foil in a second electrolyte

etch and etching the anode foil. The Examiner admits that the Arora patent fails to teach the placement of a mask with a grid of openings over the etched foil prior to a secondary etching step. Rather, the Examiner argues that it would have been obvious to have modified the Arora patent to use the mask as taught by the Sudduth patent. Applicants traverse this rejection.

It would not have been obvious to modify the two step electrochemical etch process of the Arora patent to provide the invention recited in independent claim 1, because there is no motivation or suggestion in the cited art that would lead one of ordinary skill in the art to place a mask with a grid of openings over an *etched anode foil*, prior to performing a second etch step, such that *the exposed areas of the foil can be heavily etched, while the masked areas of the foil remain lightly etched.*

The Arora patent is directed to a conventional two step electrochemical etch process. In the first step, an aluminum electrolytic capacitor foil is etched by treating the foil with an electrolyte bath containing 3% hydrochloric acid and 1% aluminum as aluminum chloride. In the second step, this etched foil is treated in a similar bath with a lower current density and higher temperature, such that the etch tunnels initiated in the first step are made wider without creating new tunnels. (col. 3, ln. 29-65). The Arora patent does not teach the placement of a mask with a grid of openings over the etched foil prior to the second etching step.

The Examiner argues that the Sudduth patent teaches "placing a mask with a grid of openings over the etched anode foil exposing portions of the foil surface (generally, col. 4, lines 5-19)." However, the Sudduth patent has no teaching of placing a mask over an *etched anode foil*. Rather, the Sudduth patent teaches growing a porous oxide mask on a surface of an *unetched foil*, such that etch tunnels are formed only at open sites on

the mask. A porous oxide mask is formed by placing the *unetched foil* into chloride doped solvent based electrolyte and applying a current thereto. (col. 5, ln. 47-col. 6, ln. 16). A stripping agent is then used to thin the oxide layer and eliminate the oxide at the bottom of the pores in the oxide, exposing the underlying foil. (col. 6, ln. 17-35). The foil is then etched according to a conventional etch process. (col. 6, ln. 36-47). There is no motivation or suggestion in the Sudduth patent to grow a porous oxide mask on an *etched anode foil*. In fact, growing a porous oxide mask on an *etched anode foil* would destroy the teaching of the Sudduth patent, namely, that etch tunnels are formed only at open sites on the mask.

Additionally, there is no motivation or suggestion in the cited art to combine the teachings of the Arora patent and the Sudduth patent to obviate the claimed invention. Use of masking, as described in the Sudduth patent, between the first and second etch steps of the Arora patent as suggested by the Examiner, would destroy the teaching of the Arora patent. The Arora patent teaches that a second etch is applied to a previously etched foil, such that tunnels initiated in the first etch are made wider in the second etch. (col. 3, ln. 43-45). The use of a lower current density and higher temperature in the second etch step of the Arora patent assure that tunnels are made wider without creating new tunnels. (col. 3, ln. 62-65). Use of a mask as described in the Sudduth patent between the first and second etch steps of the Arora patent would result in masking portions of the tunnels initiated in the first etch step, preventing those tunnels from being widened, as desired, in the second etch step of the Arora patent. Additionally, the Sudduth patent teaches applying a conventional etch process to a masked foil (col. 6, ln. 36-47), which would result in additional tunnel formation, not desired in the second step

of the process of the Arora patent. Accordingly, combination of the Arora patent and the Sudduth patent to obviate the claimed invention is improper.

For at least the foregoing reasons, independent claim 1 and claims 2-15 which depend therefrom are believed to be patentable and allowance of such claims is respectfully requested.

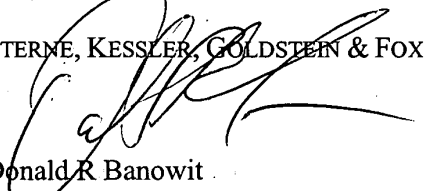
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully
requested.

Respectfully submitted,

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